

A MANUFACTURING INDUSTRY FRAMEWORK THAT HAS IMPLICATIONS FOR THE LEAN ACCOUNTING

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Abstract

This study aimed to examine the factors that affect application of lean accounting at Astra International, Tbk Group companies. This study used sample of Astra International, Tbk group companies that was selected by cluster random sampling base method. From the results of data obtained Astra Motor Components sub-sector was only sector companies that implemented lean accounting with the observational of 8 others sub-sector. Data analysis techniques used multiple linear regression analysis with IBM SPSS STATISTIC 24 program. The results of this study indicates that Continuous Improvement (CI) and Value Stream Cost (VSC) had positive and Value Stream Cost (VSC) had negative effect to implementation of lean accounting. But Just In Time (JIT) had no effect to implementation of lean accounting.

Keywords: *Lean Accounting, Continuous Improvement (CI), Value Stream Cost (VSC), Balanced Score Card (BSC), and Just In Time (JIT).*

1. INTRODUCTION

Companies that implement lean manufacturing have the goal of increasing value for customers by producing with quality excellent service and improve the profitability of the company through efficiency in every stage of the process. Customer demand in general is a short lead time so needs move quickly without having to wait long, without queuing, unnecessary large orders, excellent quality and affordable prices. Implementation of lean manufacturing can spur lean accounting needs. Because traditional accounting can not fill the needs of accounting practices in lean companies. For example in traditional accounting using analysis of variance for standard

costing would encourage excessive production and this condition contradicts the demand-pull system required in lean manufacturing.

This study discusses the factors that affect the application of lean accounting at Astra International, Tbk Group companies. Lean accounting has the potential to change the structure of the economy in Indonesia. And expected to lead to positive socio-economic changes. Thus, it takes literature, research and development to support lean implementation in Indonesia. The concept expected not only be implemented in the manufacturing industry, but also in other sectors such as customer goods, banking, health or non-profit oriented companies.

2. LITERATURE REVIEW

2.1 Positive Accounting Theory

The goal of positive theoretical approach to describe what and how financial information is presented and communicated to users of accounting information, the positive theoretical approach is not to suggest what accounting practices should be, but to explain why accounting practices achieve like their present state. In addition the positive theoretical approach strongly emphasizes the importance of empirical research to examine accounting theory that has been advanced in many accounting theory that has been advanced in many accounting theory literature can explain the prevailing accounting practices (Arif, 1999 in Indira, 2004).

2.2. Stewardship Theory

Stewardship theory is a theory that describes a situation which in managers just not motivated by individual goals but at their main outcome goal for the benefit of the organization, so this theory has a psychology and sociology base that has been designed where executives as stewards are motivated to act on principals, steward behavior will not leave the organization because steward trying to achieve the target organization. (Donaldson and Davis, 1989, 1991 in Raharjo, 2007).

2.3. Lean Accounting

Lean accounting approach designed to support and encourage of lean manufacturing. Lean manufacturing is all concepts and techniques aimed at simplifying business to the essential activities necessary to meet customer needs in a more effective and profitable way. (Brosnahan, 2008 in Sisdyani, 2010).

2.4. Continuous Improvement

Continuous Improvement (CI) is an ongoing effort to develop and improve products, services, or processes. These efforts aim to find and get the "best way" of the resulting improvement, which provides the best solution to the problem, which results will persist and even grow better. Although the changes in 'kaizen' are not dramatic but few and gradual, the changes that are caused in a certain period of time are considerable. This is different from the changes generated by western management that are usually dramatic. (Womack & Jones, 2003).

2.5. Value Stream Cost

Value streams include all activities, whether of value added or not, which is required since the product begins until the customer's hand. Value stream analysis waste to be identified and removed. Therefore lean manufacturing can have dramatic turnaround time and enable the production of small quantities with a variety of products.

2.6. Balanced Scorecard

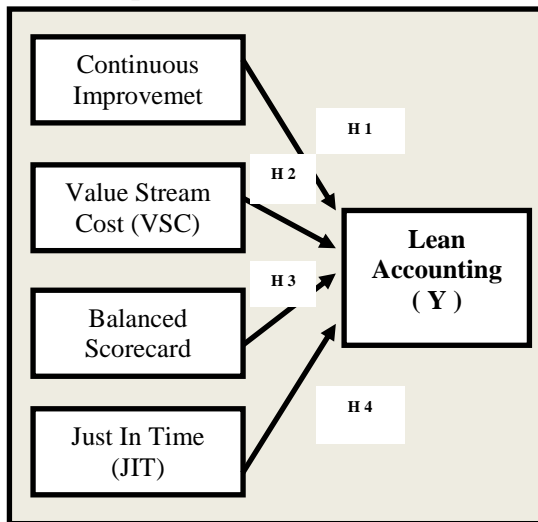
The Balanced Scorecard (BSC) is an organization's framework for organizing and use it in strategies at all levels of the organization, initiatives and steps of an organizational strategy (Hoque and James, 2000). Ghosh and Mukherjee (2006) Argues that Balanced Scorecard (BSC) is a strategy management system that is not just a measuring tool, which helps organizations to explain their vision and strategy and turn it into action.

2.7. Just In Time

Just in time (JIT) is a sustainable and compelling problem-solving philosophy that supports lean production. It's production delivers customers exactly as customers needs, without wastage, and with continuous improvement (Heizer and Render, 2004). The main goal of

just in time (JIT) is to improve the productivity by eliminating all of activities that have not added value (waste). Just in time (JIT) targets focus on continuous improvement (CI) to achieve lower production costs, higher productivity levels, quality and reliability better products, improving the delivery time of the final product and improve the working relationship between customers and suppliers (Kusumawati, 2009).

2.8 Conceptual Framework



2.9 Measurement of Variables

Variabels	Indicator	Scale
Lean Accounting	1. Specify Value 2. Map the Value Stream 3. Establish Flow 4. Work to Perfection 5. Implement Pull	Linkert
Continuous Improvement (CI)	1. Quality Commitment 2. Process Orientation 3. Plan-Do-Check-Actual 4. Talk by data	Linkert
Value Stream Cost (VSC)	1. Order Completion 2. New Products 3. Marketing	Linkert

Balanced Scorecard (BSC)	1. Financial Perspective 2. Customer Perspective 3. Internal Business Perspective 4. Growth Perspectives	Linkert
Just In Time (JIT)	1. Seek a produce-to production schedule 2. Seek unitary production 3. Seek eliminate waste 4. Seek continuous product flow improvement 5. Seek product quality perfection 6. Respect people 7. Seek to eliminate contingencies 8. Maintain long term emphasis	Linkert

3. RESEARCH METHOD

3.1. Population and Sample

In this research use Cluster Random Sampling technique to analyze data. Cluster Random Sampling technique used when the population does not consist of individuals, but consists of individual groups or clusters (Sugiono 2004: 85). Astra International, Tbk group consisting of 8 sub-groups. And Astra Motor Components sub-sector, one of sector that implement lean

accounting. Astra Motor Components sub-sector have 61,949 employees. So to know the sample research, with the calculation as follows:

$$n = \frac{61949}{1 + 61949 (0.1)^2} = 99.83$$

Adjusted to 100 Respondens.

3.2 Data Collection Methods

We are used primary data to obtained by distributing questionnaires to the employees of Astra International, Tbk that implemented Lean Accounting. The questionnaire was designed using Likert scale. Linkert scale for the first time introduced by Rensis Linkert in 1932. According to Sugiyono (2016; 93) "Likert scale is the scale used to measure attitudes, opinions, and perceptions of a person or group of people about social phenomena". Respondents were asked to provide an assessment of their views on the above 5 variables, using a Linkert scale of 1 to 5, where 1 = Strongly Disagree (SD), 2 =

Disagree (D), 3 = Less Agree (LA), 4 = Agree (A), 5 = Strongly Agree (SA).

3.3 Data Analysis Technique

Data analysis technique used is multiple linear regression analysis with IBM SPSS STATISTIC 24. And this in an formulas of multiple linear regression analysis :

$$Y = \alpha + \beta_1.CI + \beta_2.VSC + \beta_3.BSC + \beta_4.JIT + e$$

Information :

Y = Lean Accounting
 α = Interception Constants
 β = Regression coefficient
 e = standard error

4. RESULTS AND DISCUSSION

4.1 Test Instruments

Table 1 : Validity and Reliability Test

Variable	Validity	Reliability	Criteria
<i>Lean Accounting (Y)</i>	100%	.648	Valid & Reliable
<i>Continuous Improvement (X1)</i>	100%	.832	Valid & Reliable
<i>Value Stream Cost (X2)</i>	100%	.860	Valid & Reliable
<i>Balanced Score Card (X3)</i>	100%	.899	Valid & Reliable
<i>Just In Time (X4)</i>	100%	.860	Valid & Reliable

Source : self proceed

4.2 Classic Assumption Test

4.2.1 Normality Test

The residual of normality test aims to determine approximates of normal distribution. In this study the researchers

used kolmogorov-smirnov test by looking at the value of kolmogorov smirnov-z and its Asymp.Sig value.

Table 2 : Normality Test

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		100
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	1.96583371
Most Extreme Differences	Absolute	.096
	Positive	.096
	Negative	-.063
Test Statistic		.096
Asymp. Sig. (2-tailed)		.023 ^c

Source : self proceed

Based on these test results, sig value equal to 0.023 or less than α 0.05 this indicates that the test results are not eligible. Thus, we need transformation

data to natural logarithm for dependent variable and independent variable. The result of the residual normality test after the data is transformed is as follows:

Table 3 : Normalitas Test
One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		100
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	.05712065
Most Extreme Differences	Absolute	.085
	Positive	.085
	Negative	-.051
Test Statistic		.085
Asymp. Sig. (2-tailed)		.075 ^c

Source : self proceed

Based on the results, it can be deduced that the data is normally distributed. This is indicated by the value of Kolmogorov-Smirnov of 0.075 which is greater than 0.05. It means that the residual data is normally distributed, the significance value is more than 0.05.

4.2.2 Multicollinearity Test

Table 4 shows VIF value below 10 and Tolerance value is not less than 0.1, its means that among independent variables in this study have no relations with each other. so it can be concluded that the regression model does not have Multicollinearity.

Table 4 : Multicollinearity Test Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(C)	18.612	2.655		7.011	.000		
	CI	.539	.103	.633	5.239	.000	.478	2.094
	VSC	-.242	.110	-.383	-2.204	.030	.230	4.342
	BSC	.244	.109	.398	2.242	.027	.221	4.523
	JIT	-.087	.095	-.112	-.912	.364	.458	2.184

Source : self proceed

4.2.3 Heteroscedasticity Test

Table 5 : Heteroscedasticity Test

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.569	1.604		1.602	.113
	CI	.079	.062	.185	1.271	.207
	VSC	-.077	.066	-.242	-1.154	.252
	BSC	.042	.066	.136	.638	.525
	JIT	-.075	.057	-.193	-1.301	.197

Source : self proceed

From this test result, show us that all of variables x, has significant value more than 0.005.

4.3 F Test

Table 6 : F Test ANOVA^a

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	195.574	4	48.894	12.141	.000 ^b
	Residual	382.586	95	4.027		
	Total	578.160	99			

Source : Self Proceed

Based of test results, shows the value of F arithmetic is 12.141 and the value of Sig. of anova table is 0.000. We compare the F arithmetic with F table is by using formula $(k; n-k)$. K is the number of independent variables, and n is the number of respondents or research samples. In this study, the independent variables studied are 4, and $k = 4$, the number of respondents is 100. Then $(k; nk)$ is $(4; 100-4)$. F table for $(4; 96)$ that is equal to 2.47. It is seen that the value of F arithmetic is greater than F table

which means there is influence between independent variable together to dependent variable.

4.4 Coefficient of Determination Analysis (R^2)

R Square value in this test is 0.310. This means that the variation of the dependent variable that can be explained by the independent variable is 31%, while the rest of 69% is explained by other variables not included in the regression model.

Table 7 : Coefficient Determination analysis.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.582 ^a	.338	.310	2.00679

Source : Self Proceed

Based on table 8, continuous Improvement (X1) has t count equal to 5,239 which mean bigger than t table equal to 1,988. and a Sig value of 0.000 which means smaller than the significance level of 0.05. it can be concluded that H1 received that indicates that Continuous Improvement (X1) has a positive effect on Lean Accounting (Y). From the calculation, Value Stream Cost (X2) has t count equal to -2.242 which means smaller than t table equal to 1,988. and the Sig value of 0.030 which means smaller than the significance level of 0.05. it can be concluded that H2 received that indicates that Value Stream Cost (X2) has a negative effect on Lean Accounting (Y).

From the calculation, work experience variable has t count equal to 2,242 which mean bigger than t table equal to 1,988. and the Sig value of 0.027 which means smaller than the significance level of 0.05. it can be concluded that H3 accepted that shows that Balanced Score Card (X3) have positive effect on Lean Accounting (Y).

From the calculation, work experience variable has t count equal to -, 912 which means smaller than t table equal to 1,988. and the Sig value of 0.364 which means greater than the significance level of 0.05. it can be concluded that H4 is accepted indicating that Just In Time (X4) has no effect on Lean Accounting (Y).

4.5 Multiple Linear Regression Analysis

$$LA (Y) = 18.612 + 0,539.CI - 0,242.VSC + 0,244.BSC - 0,087.JIT + LA$$

Source: Self processed

From the multiple linear regression equation above obtained a constant value of 18.612. That is, if the lean

accounting (Y) variable is not affected by independent variables it have value 18.612. The value of the regression coefficients in the independent variables illustrates if the estimated independent variables increase by one unit and the value of other independent variables is estimated to be constant or equal to zero, then the value of the dependent variable is expected to rise or may decrease in accordance with the coefficient sign of the independent variable regression.

The regression coefficient for independent continuous improvement (X1) variable is positive, indicating a direct relationship between continuous improvement (X1) and lean accounting (Y). The regression coefficient of variable X1 of 0,539 means that if continuous improvement (X1) is 0, then lean accounting (Y) is 18.612. And to increase the value of continuous improvement (X1) for one unit will cause the increase of lean accounting (Y) to 19,151. The regression coefficient for value stream cost independent variable (X2) is negative, indicating the existence of the opposite relationship between value stream cost (X2) and lean accounting (Y). The regression coefficient of variable X2 of -0.242 means to decrease the value stream value value (X2) for one unit will cause the increase of lean accounting (Y) value of one unit to 18,854. The regression coefficient for the independent variable Balanced Score Card (X3) is positive, indicating a direct relationship between Balanced Score Card (X3) and lean accounting (Y). The regression coefficient of variable X1 of 0.244 means if Balanced Score Card (X3) is 0, then lean accounting (Y) 18,612. And to increase the value of Balanced Score Card (X3) for one unit will cause the increase of lean accounting (Y) to become 18,856. Regression coefficient for free variable Just In Time (X4) equal to 0,242, with significance equal to 0,364. Whether or

not an increase of one unit variable of Just In Time (X4) will not affect the value of the Lean Accounting (Y) constant. Because in this study variable Just In Time (X4) has no effect on Lean Accounting (Y).

5. CONCLUSION

The implementation of Continuous Improvement (CI) should be improved to support lean culture that is expected to be one of the supporting factors to achieve company objectives. One of them is by supporting and promoting the Quality Control Circle (QCC). Always be consistent in the use of Value Stream Cost (VSC) in determining the cost of the product, so it can always present more actual cost information, since the cost allocation element has been minimized. Companies are advised to pay more attention to Balanced Scorecard perspectives (BSC). In this research we found that indicators of BSC perspectives had the lowest average results. This means that less attention to these indicators within the company. Therefore, the application of indicators of BSC perspectives need to be optimized for the achievement of corporate objectives. We all know that Just In Time (JIT) is the key to Toyota's success in implementing lean thinking or what we know about TPS. However, in this study JIT variables become ineffective application to PT. Astra International, Tbk Group. After more in-depth analysis, there are several things that need to be improved so that the use of JIT can affect the application of lean accounting as one of the philosophy for the progress of the company, among others:

- a. Improve JIT failure on internal systems, by training employees.
- b. Establish and develop suppliers by engaging together for the benefit of both

parties in long-term business relationships.

c. Have at least 2 suppliers in each value stream. This is intended to facilitate the process of cost analysis, negotiation and tender in the process of purchasing goods / services.

d. Optimizing vendor management sections to maintain supply chain to avoid supplier delay which will have adverse impact on JIT implementation.

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